Water Quality Standards Advisory Committee
Meeting Minutes

May 10, 2004

Members Present:	
William Beckwith	US Environmental Protection Agency
Wendell Berry	NH Lakes Association
Phil Bilodeau	NH Water Works Association
Steve Clifton	Consulting Engineers of NH
John Dreisig	NH Public Health – Risk Assessment
Donna Hanscom	NH Water Pollution Control Association
John Hodsdon	NH Farm Bureau
Vernon Lang	US Fish and Wildlife Service
Eileen Miller	NH Association of Conservation Districts
Carl Paulsen	NH Rivers Council
Peter Rice	NH Municipal Association
Marjory Swope	NH Association of Conservation Commission
Members Absent:	
Michael Donahue	Business and Industry Association of NH
Robert Fawcett	NH Fish & Game
Tim Fortier	NH Travel Council
Ben Frost	NH Office of State Planning
Nancy Girard	Conservation Law Foundation
Ken Kimball	Appalachian Mountain Club
Bill McDowell	University of New Hampshire
Jason Stock	NH Timberland Owners Association
Others Present:	
Neil Cheseldine	Wright-Pierce
Richard Hannon	Canobie Lake Protective Assn.
Victor Krea	Wright-Pierce
Allan Palmer	PSNH
Ronald Rayner	Environmental Consultant/BIA Member
Peter Rice	NH Municipal Assn.
William Schroeder	Canobie Lake Protection Association
Andrew Serell	Rath, Young & Pignatelli
Doug Starr	Town of Jaffrey
Anthony Zuena	SEA Consultants, Inc.
DES Staff Present:	
Paul Currier	Administrator, Watershed Management Bureau
Bob Estabrook	Watershed Management Bureau
Gregg Comstock	Watershed Management Bureau
George Berlandi	NHDES
Lisa Fortier	Executive Secretary, Watershed Management Bureau
	Minutes of this meeting prepared by Marie LosKamp

Introductions and Acceptance of March 22, 2004 Draft Minutes:

- **Marjory Swope, Chairperson, opened the meeting. The first order of business was the minutes from the last meeting. Marie had questions on page 2 and page 10. Anthony stated that on page 2, put both statements by him together and delete Paul's comment in between these two statements. On Page 10 John requested that *they* be changed to *neighbors*. On page 6 change references by Victor Krea to John Dreisig. On page 8 change reference made**

by Anthony Zuena to Andrew Serell. On page 10 items highlighted in yellow by Bill Beckwith, Bill will get back to Marie on this.

- **Motion to accept minutes as amended, seconded, all in favor, any questions? Minutes of February 9th Meeting adopted as amended.**

Housekeeping Items by Bob Estabrook:

First: There is a new policy (or an old policy that we never followed) that we are supposed to read Emergency Instructions for Meeting Rooms and Smoking Restrictions. Basically – if there is a fire alarm, go out these doors and go out the main entry doors and monitors will direct you to a certain location in the parking lot. Smoking is not allowed anywhere in the building, or near the entrance to the building.

Second: - I want to make an announcement that Phil Bilodeau has replaced David Miller as the representative of the New Hampshire Water Works Association as a formal member of the committee.

Water Quality Assessments

Presentation of 2004 305(b) Water Quality Report and 303(d) List of Impaired Waters:

Gregg Comstock gave a brief summary of the assessments for the various waterbody types. Section 305(b) of the Clean Water Act requires states to put together a report every two years that is submitted to EPA, who in turn submits all the reports from the 50 states to Congress. This report describes the quality of our surface waters. Section 303(d) is another section of the Clean Water Act that requires a submittal of a list every two years to EPA that includes all waters impaired by pollutants that are not expected to meet water quality standards within a reasonable timeframe even after implementation of best available technology like secondary treatment at wastewater treatment facilities or best management practices for non-point sources. Those impaired waterbodies that are on this list, also need to have a Total Maximum Daily Load (TMDL) done for them. It is important to understand that the 303(d) list is a subset of all the impaired waters and it does not represent all the impaired waters. The primary objective of the 305(b) report is to assess all of our surface waters for their ability to support all designated uses. The 305(b) Report and 303(d) List are listed on our web site at the following link www.des.state.nh.us/WMB/swqa . Briefly how we make assessments: obviously the quality of our assessments is based on the quality of our data, so it starts with good monitoring information and we use our volunteer monitoring information for the lakes and the rivers. We hope to create in the future a volunteer biological assessment program and incorporate that sometime in the future. We use our own data and any other data that comes into us from the outside. These are just a few of the sources. When information is submitted it is important that you provide us with quality assurance information also, so that we can make sure that it is representative of the waterbody. We then needed to develop a detailed methodology that we could use internally to come up with consistent assessments and that is called the Consolidated Assessment and Listing Methodology (CALM). It just describes in detail how we assess all the uses, includes descriptions and terms that we use today. It is a living document, as we learn more, and as we receive more data, it is something that we will continue to update to make our assessments more representative. This document is also available on our web site at the above referenced address. Overall we have over 5100 assessment units in our database that we are tracking information on and each one has a unique ID. Our web site has information on how to find the assessment unit number. If you know the waterbody name, there is a spreadsheet that will give you the assessment unit ID number. We have over 3000 assessment units for rivers and streams, 1100 units for lakes and ponds, 49 assessment

units for estuaries, etc. If you have any data, please send it to us. Guidance for submitting data is on our web site.

Bob Estabrook gave a brief description of lakes and ponds and the information contained in the graphs that are part of the Power Point presentation. The lakes are reported as acres not number of lakes. Most lakes are one assessment unit and the only exception is the swimming beaches that were cut out as separate assessment units. We have the beach as one assessment unit and then the rest of the lake as another assessment unit. Aquatic life – it looks like a lot of lakes and ponds are not supporting aquatic life use, and that is primarily because of exotic weeds. Primary causes of impairments - again mercury is the major cause for fish consumption; and the primary source of impairments is atmospheric deposition for toxics which is mercury.

Ken Edwardson demonstrated a GIS tool that we have just recently put out on our web site that allows you to find the assessment information for any waterbody that we list. Our web site has changed quite a bit. To find the information that you are looking for from the Topic List pick *Surface Water Quality Assessments* and go from there. Ken walked everyone one through the whole process including how to find a particular waterbody and the waterbody's assessment unit number. You can search by a particular lake or river name to locate the data you are searching for.

Question: Carl Paulsen – Gregg, on the fish consumption numbers, when you pull out mercury, you implied that you have 100 % assessment coverage. Is that true?
Gregg – Yes, what we said was that if the mercury fish consumption advisory was solved, and we went out and sampled and we found that levels are low enough that we could rescind the mercury advisory, we would show that it is fully supporting then. For rivers there is still a small segment on the Androscoggin…. ***Carl Paulsen*** – No, my question was there are no gray areas or tan areas; are you saying or suggesting that you have a 100% assessment of all the waters? ***Gregg –*** The mercury fish consumption advisory applies to the whole state. ***Carl Paulsen –*** My point is that you made some assumptions on the mercury advisory. You haven't actually gone out and measured fish in each waterbody? ***Gregg –*** Right. ***Carl -*** and the gray and tan areas on the other bars imply that we haven't actually measured it. Is it true that if you removed the mercury, you have actually assessed basically all the streams? ***Gregg –*** No, not at all. ***Carl –*** So there should be some gray and tan there. ***Gregg –*** In fact some states do show just for fish consumption for mercury. Even though it applies statewide, they will just show only the waterbodies that they have data for. We opted not to because we thought it was confusing to the public where we have the Department of Health & Human Services saying there is a meal consumption advisory on all waterbodies. We want to be consistent.
Paul – I think what you are asking Carl is do we have fish tissue analyses for a full range of contaminants that might result in subsequent advisories in other parts of the state, and the answer is no. We have some. ***Carl –*** I assumed that was the case but I wanted to make sure.

Revised Draft Rule Language – Paul Currier

On the draft that you were sent, the changes from the last time we met were indicated in a different color. On the first page there was a change to the turbidity language stemming from the discussion last time about where you would sample to obtain background, and the realization that background for a lake does not relate to upstream very well. So the words are intended to define background as a place that is not influenced by the discharge. I believe that was the only change there.
Vern – At the last meeting someone made a comment about the 10 NTU standard and discussed where you had background turbidity levels for lakes, and the background level is what you are showing on those charts where all levels are less than 1 NTU. At the last meeting the comment was raised that when you have a 10 NTU standard it makes a great difference if you are starting out where your background is very low, like here you have a 10 fold increase that would be allowable versus if

your background was 100 NTU and your increase was only 10 NTU that would be a very much lower percent change. Looking at background you have here for lakes, it seems like when you are talking about where you go with it, if you start with the other, which is the natural occurring, and then look at this 10 NTU, it makes a big difference as to where you are starting from as to how reasonable the 10 NTU standard appears to be. Because this subject had been raised at the last meeting by Ken, it seems like it is worth chewing on a little bit.

Paul – Right and because we didn't propose to change it, we have not done much analysis. The turbidity standard is generally related to aquatic life use support and Gregg knows more about it than I do, but basically it is an intensity and duration type of thing. We can go to the literature; it is an intensity and duration type of thing that would relate to aquatic use. If you are talking about disturbance of sediment resulting in turbidity, and generally violations are associated with wet weather and with erosion control or failure of erosion control and 10 is a pretty low number when you are talking about turbidity that results from wet weather and disturbed soils. I think 10 is a fairly conservative number when you are talking about aquatic life use support. You will notice that ten is just an intensity and there is no duration occurring in the standard.

Anthony Zuena – I have a question Paul that may be answered in a conversation that we are going to get to on *as naturally occurring*, but I will ask the question now just in case it doesn't. I continue to have concern under the nutrient section, 1703.14 (e) as a statement that potentially represents the continuing impediment to water transfers and it seems to hinge on the part of the phrase that says, *that would contribute to natural eutrophication*. So my question is whether that issue is resolved in the discussion that we are going to have, or is that different?

Paul – Unfortunately, I think the answer is that it's different. We have spent a lot of time discussing that and have never reached a conclusion. I mentioned at the time that DES had prepared a draft discussion paper in which we had said that for nonpoint sources that nonpoint sources for which some specified state-of-the-art BMPs that we would come up with have been applied and would be considered to apply to that.

***Anthony Zuena* – What about the point that it says point or nonpoint source discharges, and again if one were to define a water transfer as a point discharge, then one could argue who is opposed to that water transfer that any amount of nutrient, for example, would contribute to *cultural eutrophication*. Again it just strikes me as a road block that we still haven't figured out a way to get around.**

- ***Paul – You are right, and we will have to do some more work on that in light of the reference to this approach. This is not resolved and it needs to be resolved.***

Marjory – Any comments on page 1 or page 2?

Marjory – I had a question. I was wondering if you were proposing to define aquatic life. I assume that includes plants and animals, but it isn't in the definition section, at least the definition section I could find.

Paul – I think you are right, there is no definition. I don't know if EPA has one or not.

Marjory – Define *biota* as a species of plants or animals occurring in surface waters, but I didn't see aquatic life.

Paul – The definition of *biota* sounds like it almost might do it, but I think that if EPA has a definition we would use their definition.

Marjory – Revise numbering/lettering on page 2. It should be (c) and do a new (d), etc. Now to page 3 any comments.

Paul – On page 3, in response to comments at the last meeting, this section was now restricted to toxic substances and shouldn't be. The intent of the changes here are to make it a section for application of criteria in general in computation for establishing discharge permit limits and we added words by Drew Serell that would allow other parameters to vary with time, including input parameters in dynamic modeling. There are two things that we realized after sending this out in a hurry that we hadn't done. The question on the rules last time was what is the EPA acute aquatic life criteria and it is in fact one hour once in every three years. We propose to change the words to read

one hour once in every three years. We will get this to you so that you can review it before we finalize it. If the data are not available to estimate the one hour average concentration, the one day average may be used. That is consistent with the EPA technical support document. Basically it acknowledges that most of the time one hour data are not available whereas one day data are available.

Vern – Paul, under (f) and (g) for steady state, do you have condition limits established for the steady state, leave open ended the biologic conditions that are time dependent, is that what you are thinking of using?

Paul – No that is the (a) and (b). The time dependent conditions are the 4B3, for chronic conditions are exceeded for no more than a 4 days on average no more than once in every three years. That is the EPA language and we propose to change it to that. For the acute, it is one hour average shall be exceeded no more than one day once every three years. Those are time dependent criteria and those are what will be used as the end points of the time dependent model.

Vern – I guess here is the question, you require 7Q10 and 1Q10 for steady state for the modeling exercise, and do you intend then to allow time dependent for some of those parameters proposed using that during the average flow conditions?

Paul – No. The 7Q10 applies only to steady state modeling in which time does not occur in computations. If time occurs in computations used to estimate whether or not a particular discharge meets the standard then (a) and (b) apply. In a time dependent model, where the parameters, both the input and the output, are functions of time then an average condition is not something that is considered. The flow is a function of time as is concentration and the output of the model which estimates concentration in the receiving water is a function of, among other things, flow. All of which vary with time. The output of the model has to estimate that the concentration in the case of, for example, chronic criteria that the four day average concentration in the stream does not exceed the chronic criteria more than once in every three years on average. That is the statistic that is generated from the time dependent results. We haven't said so, but our thinking here I believe is that a day is the increment of time in which this is conceptualized. It could be an hour, it could be a week, but in general flow information is readily available on a daily average. The standards are concentration based and not load based. However, if there is an increase in load it would be a subject of an antidegradation review. The purpose of the model, time dependent or steady state, is to estimate the conditions under which the concentration requirements for the criteria would be met.

Vern: In (f) and (g) when you put a 7Q10 flow for that calculation on steady state it sort of seems like you put a fixed amount on what the discharge balance of pounds per day could be, whereas it seems like once we go to time dependent then there is an open ended question which gets back to the question of knowing if you have to address an antidegradation review.

Paul: - That is correct, the standards are not framed in terms of load, they are framed in terms of concentration. Instream concentration - the criteria is that the instream, for toxics, in this case, shall be exceeded no more than 4 days on average once in every three years or a one hour average once in every year. Those are all concentration based and they do not address the issue of loading.

Allan Palmer – Isn't the concept of the time dependent that you are going to take real time historical data and plug it in over the whole time frame as what your flows will be?

Paul – In general yes. You would use the available information to estimate how flows and concentrations and other things that might go into a model will vary with time.

Allan Palmer – So that is where you are getting your data from.

Paul – Right from historical gauge data. I think we had promised last time, and the words haven't changed much since last time, that before finalizing these, we would develop scenarios with Jaffrey and Keene. We have not done that yet. We are talking with Jaffrey and I think that we have proposed for the next meeting to be further along in a detailed scenario showing an example of how these words would be used in order to develop a time dependent modeling situation that would lead to a discharge permit list. We also need to talk to Keene.

Marjory – I think that is where we left it last time. We had a similar discussion and then you were going to go off and chat with Jaffrey and Keene and possibly Rochester and come back with something else. So I think we haven't progressed from where we were last time which is we haven't done anything yet.
Vern – I guess the other thing I recall is the antidegradation, flush out the antidegradation policy.
Paul – That is right. We propose to address that under priorities for Water Quality Standards Advisory Committee topics.

- **For the next meeting we will have the one hour words added, for the chronic standard we will have the words that are identical with the EPA technical support document, which they are not quite now; and we will have some discussion materials for conversation with Jaffrey and maybe Keene.**

Marjory – Are we through with this for the moment? It sounds to me as if it is on hold?
Paul – We think it is almost final pending the considerations for specific examples of how we would use them.

Proposed New Definition for *naturally occurring*

Marjory – So we are now to the new definition of *naturally occurring*.
Paul – Bob is passing out a handout of examples of three definitions of *naturally occurring* from the regulations of the states around us for your information and the thought that we might consider changing our *naturally occurring* definition slightly.

The proposal is to use a reference condition approach to modifying what *naturally occurring* means. Reference condition approach has been widely used by EPA in the recent past in their guidance as to how to set biological criteria. Criteria that uses biological metrics which are counts of organisms that inhabit particular locations where you find a reference location which is as pristine and un-impacted by human activity as you can get, and you go measure whatever quantity it is you want to set the standard for at a whole collection of these locations that are as good as you can find and then you look at the population of those and there is obviously natural variability. You say, well, if it is within a certain range of that population, we will call it as equivalent to or indistinguishable from the reference condition. We would propose this approach for the quantities in the rules that are specified to be none unless naturally occurring. We would propose to use that methodology to define conditions that cannot be distinguished for those parameters from naturally occurring. I should add that the example that you have here is for example purposes only. We basically did a very quick cut of the data that we had to see what it would look like and Bob pointed out after this was sent out that there are a couple of errors in here. I will tell you briefly what they are. We actually looked at 60 lakes, 30 of which were estimated to be reference lake and 30 of which were as non-reference as we could find. The idea was to look at the variation in the color, nitrate, total phosphorus (actually the standard says nitrogen and you add nitrate to TKN to get total nitrogen), and turbidity and just see what kind of range variation we were getting and what type of an approach you might come up with. These numbers are not real, we have not carefully screened these lakes to make sure they are reference conditions and there are probably not enough of them anyway but it gives you an idea of how the process would be used. The turbidity data is particularly sparse. Bob pointed out there are only 13 of the 60 lakes in this data set in which turbidity was available and of those only one reference lake. We don't collect turbidity but the VLAP people do collect turbidity. There is not a lot of turbidity data. Having said that, this is an approach that EPA has used and has recommended to the states and we think it might work in quantifying the narrative standard for "none unless naturally occurring". Specifically for color, turbidity and nutrients and there are two other things in the standards which are none unless naturally occurring and they are temperature and the other is oil and

grease. I haven't thought a lot about temperature. Oil and grease are not commonly measured anymore. It is my understanding that it is a UV method for determining oil and grease and it was never very good. Its sensitivity is lousy and no one uses it anymore. Are there any questions?

Anthony Zuena – The concept seems clear but obviously there are difficulties in the details. I was thinking of a particular set of sources when I was reading this. What occurred to me is that the source water as well as the receiving water in most of the cases of your 75 percentile are exceeded. So how does one go about doing this analysis when even the source water, let me try and be as clear as I can with the question. When both the source water and receiving water in the case of a water transfer already exceed the 75%, how does one do this analysis?
Paul – Good question. If the receiving water exceeds it then we would determine that the Class A standard is violated. I think what we would propose to do is to take a look at the watershed and if there was some obvious reason, non-anthropogenic reason why the 75% was exceeded, then we would identify that and say it is not a violation. If the source water violates you would have do some kind of a mixture calculation to estimate the value in the receiving water. I guess I don't know the answer as to how you would deal with a proposal for discharge… I do know the criteria for discharge to a waterbody that is violating the standard, is no additional loading.
Anthony – Say that again please.
Paul – The criteria for a new discharge to a waterbody that is already violating standards is that there shall be no additional load. I am not sure how that applies to color, for example.
William Schroeder – I am thinking phosphorus in particular. At Canobie Lake the phosphorus levels are way and above this 75%.
Paul – Canobie Lake is on the 303(d) list for excessive algae growth and it is an easy step to phosphorus as the cause of excessive algal growth. So I think the criteria for a discharge in that case would be no additional loading. It violates its Class A. It violates based on algal growth. It is basically violating two pieces of the standards if you use this approach. That would be a TMDL if necessary which would result in a load allocation for phosphorus which would result in action by the various sources of phosphorus. I think that in order for Salem to proceed with its proposed transfer, we need to do the TMDL and include that transfer in the loading analysis for Canobie Lake. Independent of any transfer, there needs to be reductions in phosphorus going into Canobie Lake in order to mitigate the excessive algae growth.
William Schroeder – That seems consistent with what you said a year ago when Canobie Lake was also on the 303(d). You said that means that a TMDL study is needed and presumably that would then lead to steps that need to be taken to reduce the phosphorus loading in the lake. Has that been started yet? Is there a plan for when that study would be started?
Paul – Gregg what is the date.
Gregg – The date would be 2015.
William – Is this because of a long list of stuff?
Paul – Lack of resources. Obviously if the Town of Salem wanted to do it, or if there were some other overriding reason, it would get done sooner. We have not addressed the issue of how you deal with the no additional loading requirement for nonpoint sources in watersheds like this.
Ronald Rayner – Alternatively, Paul, couldn't a request be made to reclassify from a Class A to a Class B waterbody based on use designation in the area?
Paul – It would still be on 303(d) list for excessive algal growth because that is the same whether it is Class A or Class B. When you have the TMDL all done and the phosphorus loading reduced and the excessive algal growth mitigated, it might still be a waterbody that would violate the provision *as naturally occurring.* It still might be listed as impaired based on this kind of an analysis.
Marjory – Would that still prohibit transfers in?
Paul – I am not sure. it might still place the requirement of no additional loading. I guess if we use this approach and this definition of *none unless naturally occurring* then phosphorus loading would

need to be reduced until such time as concentrations in Canobie Lake came down to the 75 percentile. It might be a long time.

Vern – How do you handle the criteria you have in here for lakes. Wouldn't there be differences in turbidity standards for natural background between a river and a lake?

Paul – Absolutely, and we would propose to stratify this process by waterbody type at the minimum. There might also be other clear identified physical factors in watershed characteristics that would also result in differences in these populations; and to the extent that we can identify those, we will do that as well. One of the characteristics of this process is that in order to get your population of reference sites, you can separate out different reference conditions depending on the characteristics of the reference sites. EPA tends to do that by ecoregions and they have a national map and refinements of that which identifies the ecoregions. New Hampshire has two ecoregions, one is essentially the coastal plain and the other is everything else. You could also divide it up in other ways.

Donna Hanscom – Does pH also have a reference to the *none unless naturally occurring*. Is that something that is in some of the standards?

Paul – I think so.

Donna – And so would that be part of an analysis like this?

Paul – I think the answer is yes. You could use this procedure. pH is a tough one because the atmospheric deposition has caused conditions everywhere even in all of our reference sites to be something that everyone agrees is not naturally occurring. So, we have always said, some of our impaired lakes for atmospheric deposition are in watersheds that do not have a lot of people. We have always called them impaired due to atmospheric deposition. You can use it for other things which don't specify *not unless naturally occurring*, they specify some number or unless naturally occurring.

Anthony Zuena – I have a question on the issue of the elevated level of phosphorus. Going back to the earlier presentation if you look at the 303(d) list for Canobie Lake, interestingly enough it says under the use category drinking water after adequate treatment under the heading use support status, not supporting. I guess I am really trying to understand here without focusing this on Canobie Lake, but if Canobie Lake by everyone's acknowledgement now, doesn't meet Class A then why is it Class A?

Paul – As with any classification there is the legislative classification that creates the targets for those waterbodies in that class. That is what a legislative classification is. It is a target and actions are to be taken to correct whatever condition it is that causes a waterbody to not meet the standard. That goes back to the early Clean Water Act days when lots of waterbodies did not meet the classification and the legislature enacted the classification system and then there was a time table in which treatment plants were constructed and other actions were taken.

Marjory – I thought when we left last time; you were going off to create a subclass for water transfers?

William Schroeder – Going off on a long trip.

Marjory – I thought that you would come back with having created a sample of a subclass or something.

William Schroeder – I think that was, indeed, discussed last time as you said. It doesn't seem very palatable and it is best that we had better not do that. It raises lots of questions.

Paul – I think that the legislature would probably have to do that. The legislature is the body that creates classes. When, for instance, we took away the Class C (when we did away with it in the early 90s), the legislature did that. So the legislature gets to set up the classification system and the framework. I think as Bill Beckwith pointed out, ambient standards are exactly that. They are standards that are applied to a particular waterbody, no matter what is going on in the waterbody, no matter who is discharging to it, no matter what the nonpoint sources are, it is an ambient standard and it applies in the waterbody. If you create a subclass, you are saying well Class A has this ambient standard except for this one activity it has a different standard. It seems to be in conflict with the idea of an ambient standard.

Bill Beckwith – Just for clarification, not to be confused with the ability to set various subclasses with different ambient standards and that is possible.
Paul – But usually not based on a particular activity. You don't want to say well if it is a municipal treatment the ambient standard is this, if it is a cooling water discharge the standard is this, we don't want to go there.
Anthony Zuena – Seriously after two years of these discussions, you have effectively killed any notion of a transfer to Canobie Lake now as a result of this, if this was to go forward. It cannot happen now. Unless I have misunderstood that is what you have said.
Marjory – I haven't said that.
Anthony Zuena – There are two possibilities. The source water has much lower phosphorus content so one could argue dilution is the solution. The other is with the BMPs that are going to be constructed as part of the I93 expansion, one could show mathematically that there is going to be some reduction in phosphorus through those retention/detention basins, but it sounds like it is going to take 15 years for the study to be done before this can be a serious conversation.
Paul – The study can be done by Salem if they want to have a conversation, or some combination of whatever we can figure out. DES is not offering to do the study in order to answer that question. We would work with Salem or whoever else.
William Schroeder – I think the situation, Tony, that you are commenting about, isn't a result of this way of trying to define what is *naturally occurring*. At the beginning when we were talking about this, the idea was that well you would need to change the classification of a Class A lake to a Class B lake and then have an antidegradation review. Then the momentum seemed to build for well couldn't we consider transferring water into a Class A lake and I think the answer is, well I guess it could be considered but the standards of a Class A lake would have to be met. At that point, you conceptually have a choice. You could either meet the requirements for a Class A lake or change it to a Class B Lake and then meet the requirements for that. I don't think it is a question of exactly how *naturally occurring* would be implemented that is the issue. In fact from the comment that was just made a little bit ago, even if Canobie Lake were reclassified to a Class B lake, it still has phosphorus and algae problems and it still probably wouldn't pass an antidegradation review. That is the way it has been for two years. That is not a result of playing with these words.
Paul – I think that is true. I think the TMDL is required anyway irrespective of classification and what the TMDL would do for Salem would be that you could include a point source load, the proposed transfer from Arlington Pond, in the TMDL along with other options, other phosphorus loading estimates to estimate what the loadings are to the lake and what should be done about it.
Neil Cheseldine – You said the source water has lower phosphorus levels in the lake.
Anthony Zuena – By a lot.
Neil Cheseldine – So environmentally speaking, wouldn't you end up with a lower concentration of phosphorus in the lake after the transfer? From a growing algae standpoint wouldn't you grow less algae with a lower concentration of phosphorus?
Paul – I think the answer is not necessarily that it is a loading issue rather than a concentration issue.
William Schroeder– There is a flushing issue too typically with transfers.
Neil Cheseldine – Wouldn't this be flushing more out before it has a chance to grow?
Paul – The answer is you need to do the mass balance and include the various physical, chemical and biological processes in a lake.
Neil Cheseldine – You are right, you would have to do that analysis but would that analysis be allowed I guess is the question. If the analysis could show that environmentally you had less of a phosphorus issue, less of an algae growth issue with the transfer than without, would that be allowed even though the regulations read verbatim would say no, that loading of one ounce of phosphorus is too much even if it comes along with millions of gallons of waters.
Paul – The answer is yes. That is what a TMDL would do, should do and that is what a lake model would do is estimate the concentration of phosphorus at which excess algae would be produced given the physical characteristics of the lake, flushing rate and so on.

Ronald Rayner – Paul, the reason I mentioned earlier about reclassification, wouldn't the TMDL (admittedly this is hypothetical) be considerably simplified if Canobie Lake was reclassified as a Class B than if it remained a Class A? Level of scrutiny in the antidegradation review would both be somewhat simplified having been reclassified as a Class B.
Paul – I think the analysis would be the same. The *none unless naturally occurring* standard applies to Class A lakes separately from the *suitable for drinking water with adequate treatment* which leads to the excessive algal growth determination. The reason for the excessive algal growth determination is that Salem gets taste and odors in their finished water and we made the conclusion that it is the result of excessive algal growth and it is not removed by conventional treatment.
Wendell Berry – Does anyone else find it troubling that we appear to have a lake classification system that does not necessarily and may not even intend to reflect the actual water quality of the lake in its classification?
Marjory and Paul – That has always been true.
John Hodsdon – What does Salem have for a plan B for what you are going to do when you suck Canobie Lake dry? You don't.
Answer: We are not going to state it publicly.
Richard Hannon – They don't. All right then I am going to ask if DES requested that they submit one and no they didn't. They are at 95% percent capacity on the lake and they have been for 3 or 4 years. However, instead of transferring the water into Canobie Lake, transfer some directly into your drinking water treatment plant.
Answer: They do.
Paul – I would like to suggest that the committee stick to the issues at hand.
Comment: Paul what I am hearing is that if you have a favorable TMDL post transfer, showing that the transfer is favorable to conditions, that overrides nutrient standards then. If you do a TMDL that shows that it is improving the situation.
Paul – The results of a TMDL would be an estimation of a scenario in which the lake would meet standards.
Bill Beckwith – Your prohibition, we are getting into some definitions, your prohibition is based on not being able to meet *as naturally occurs*.
Allan – You cannot transfer any water that has phosphorus in it. The nutrient standard says you cannot transfer water with phosphorus in it.
Bill Beckwith – Well if that provision is still there, I don't know how you can say it is overridden.
Paul – That goes back to that it would contribute to cultural eutrophication or words like that.
William Schroeder – I think there used to be a phrase which has been deleted, the phrase under water transfers was *there shall be no transfer of any water containing any phosphorus*. I think that phrase is gone. You still have the cultural eutrophication clause, which is an issue. I don't see anything else that says you cannot transfer water containing some phosphorus.
Allan - But wouldn't that in essence kill this effort.
Wendell Berry – I think the problem with the effort is that the lake currently has a phosphorus problem and the correct action is to do something to cure the phosphorus problem. Transferring water into the lake that also contains phosphorus doesn't help it, it makes it worse. I think you would have to do a scientific study which would show comprehensively what you are going to do in the watershed and show that the net result of all this is going to take the lake into compliance and then you might be able to get the project approved. But I think that is a hard sell.
Ronald Rayner – That was exactly my question. If you do that study as part of your whole TMDL and you show that yes transferring water will be part of the process to bring this lake into compliance, will you be allowed to do it overriding this condition (e) which says you cannot?
Marjory – Yeah, 1703.14 (e) says you cannot.
Ronald Rayner – So even if you go through that entire scientific study, do a TMDL, and everything looks great, and yeah this is going to bring us into compliance. Can you do it under this regulation?

Carl Paulsen – That was exactly the question I started with in terms of the term cultural eutrophication, unless it is connected to now this 75 percentile as a way of defining it, it is another hurdle. If you are defining cultural eutrophication as less than or equal to these reference standards, in terms of water quality, then you do the TMDL analysis and you can show that you can come up with, even after transfer, enough net reductions in phosphorus from other sources, have you then met the definition of cultural eutrophication by virtue of the fact that your nutrient levels are below the 75th percentile (I am not sure in which direction I am going). You understand my question?
Paul – I think it is a point well taken that we need a quantitative definition, we have been here before, of what cultural eutrophication is related to phosphorus basically for lakes.
Carl – It would just seem to me that if you are going to go through this exercise of defining *as naturally occurrs*, they need to be related in some manner so that you know what your target is.
Wendell – Cultural eutrophication itself is nebulous enough. It is a problem because it would not be in terms of net gain but in species differentiation.
Paul – I think we had proposed to remove the words cultural eutrophication in previous discussions and that didn't work.
Marjory – That didn't work? I don't remember that, was it awhile ago?
Paul – It may have been awhile ago.
Ron Rayner– I believe it goes back to a meeting, ?? and I raised the issue and Chip was here from Concord and we got into a long debate about how it would impact municipalities in general with regard to water transfer and it was agreed then that we would either come up with some way of quantifying it or deleting it. We have to tie it to something.
Marjory – So it is not your recollection that we talked about either defining or taking it out.
Ron – I agree that it needs to be defined.
Marjory – It is your recollection Paul that we tried to do that and it was rejected?
Paul – Yeah, I am not sure that it was strongly rejected.
Carl: – Isn't it defined though by *as naturally occurring*.
Comment - I would say for Class A.
Comment - It seems to be the way you are pushing this.
Carl – The transfer that had more phosphorus than was *naturally occurring* there is no way you would ever reach *as naturally occurring* with that transfer. You would also have to do other things through your TMDL.
Paul – I am not sure that would do it because if we did that, if we made the criteria for class *as naturally occurs* for Class A the same as the criteria for contributing to cultural eutrophication then we would have a standard for all lakes and ponds that is equal to the Class A standard and I don't think that is what we want.
Carl – Well no, you would have to come up with a separate cultural eutrophication definition for not in Class A waters.
Paul – We could use a different percentile. For Class A we are proposing to use 75 percentile of the reference lakes.
Donna Hanscom – What you gave us at the last meeting was for cultural eutrophication something to the effect of noticeable but not to the point of designated use is not supported. I don't know if you have that as an official definition or that was just your thought at the time.
Paul – That is the idea that would contribute to cultural eutrophication is a higher standard than supporting the designated uses. It is somewhere in between as *naturally occurs* and does not support the designated use.
William Schroeder – Tony, you made a statement earlier that surprised me; you said that the phosphorus concentration in Arlington Pond water is a lot less than Canobie Lake.
Tony – Correct
William – As I remember some of the data that was in the report you filed a couple of years ago with DES, I don't remember that.
Tony – I'll show you the data.

William – What I remember is a significant range from one measurement to another but the average numbers look pretty comparable.
Tony – I'll show you the recent results. Paul, on the values you came up with for purposes of the illustration, I may have misunderstood in the very beginning, but are you saying these numbers are still being looked at and aren't numbers to be taken as hard and fast.
Paul – Yes, absolutely. This is for illustration and we selected a population, 30 reference lakes, and 30 definitely not reference lakes for which we estimated.
Tony – The second question, the numbers that you will ultimately arrive at, they represent what, annual average or max?
Paul – Good question. We haven't thought about that yet. The question would be, I think the way we would do it is we would define an index period for our samples that would be included in there, recognizing that phosphorus does vary in lakes with seasons.
William – Paul, can I make a couple of comments on this proposal. The whole idea of establishing some reference conditions based on lakes that appear to be not impacted much by human activity, I think is an interesting proposal and you obviously have done a good deal of work already to think about it. But I want to make two points. The first is that this approach is very new. I think it needs a thorough discussion and some time for all of us to think about the implications of that before we go into if in fact we move that way. The second thing is that the implication of this goes far beyond water transfers. If this statistical analysis of reference sites is accepted as the way to determine what is naturally occurring, then it would apply to any activity which would impact a Class A waterbody. So it wouldn't just be water transfers, it opens the door to this approach being used for any activity. I think we need to have that in mind as we talk about it.
Paul – I think that is true. I think potentially what it would do, especially if we use the 75th percentile, there are a certain number of natural lakes that fall outside the 75th percentile, and what I am saying is that we would have to do a further analysis to satisfy ourselves that there is basically no detectible human influence here in order to let it be outside the 75th percentile and not be determined to violate the standard.
Paul – I guess what we would like to do, and it sounds like people are receptive to the idea, we will explore it some more and present a better idea.
Marjory – I don't see many nods but I don't hear any disagreements, so why not.

Other Business

Priorities for WQSAC Topics

1. Conversations with Jaffrey and Rochester
2. Flushing out of terms:
   a. *naturally occurring* 75th percentile
   b. *cultural eutrophication*
3. Review the current process in the rules for antidegradation and how that works.
   All states are required to have rules that address antidegradation review and we do, and I think ours is a clone of Rhode Island. **George -** it is similar. We will do that next time, as time permits, we will present some read ahead information. Look forward to discussions on antidegradation.

Marjory – Any other business?

Steve Clifton – I have a question for DES, we talk about time dependent modeling or steady state modeling, would there be a chance to have someone speak in general terms to discuss what we are actually talking about. When we looked at time dependent modeling, we added a level of sophistication that may be very costly and maybe for the group's sake, just to get an understanding.

Maybe someone from EPA who has done that type of modeling to give us a general overview of what we are talking about.

Paul – I think the discussions relative to Jaffrey will help in that regard. Conceptually the idea is that things don't have to be a continuous function of time in order to qualify for time dependent modeling. We are in the process of talking with Jaffrey about that and the proposal is to present the results of that next time.

Next Meeting Date

Tuesday, July 13, 2004 at 1:30 pm.

- **Marjory – Do I have a motion to adjourn**
  Donna Hanscom made a motion to adjourn, motion seconded, all in favor.

Meeting Adjourned

Adjourned at 3:30 pm